

APPLICANT(S): STELLACCI, Francesco  
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### REMARKS

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

### Status of Claims

Claims 1, 40, 49, 50, 52, 57, 97, 106, 107, 109, 111, 112, 145, 146, 177-180, 182, 183, 215, 216, 246 and 247 are pending. Claims 111, 112, 145, 146, 177-180, 182, 183, 215 and 216 are withdrawn. Claims 1, 40, 49, 50, 52, 57, 97, 106, 107, 109, 246 and 247 have been rejected.

### CLAIM REJECTIONS

#### 35 U.S.C. § 103 Rejections

In the Office Action, the Examiner rejected claims 1, 49, 50, 52, 57, 106, 107, 109, 246 and 247 under 35 U.S.C. § 103(a), as being unpatentable over Guire *et al.* [US 6,514,768] in view of Liang *et al.* [US 2003/0148304]. Applicants disagree.

The Examiner alleged that if a person of ordinary skill in the art would combine the apparatus of Guire with the molecules described by Liang this would allow for conjugation and glass immobilization reactions of the multi-ligands of Guire *et al.* to be accomplished in the shortest time. Applicants disagree.

Applicants assert that there is no motivation to combine Guire with Liang, since there is no suggestion in Guire that such combination can work and since such combination does not arrive at the claimed methods. There is no teaching or motivation in Guire to remove the linker (binding partner). While Guire describes transferring a multi-ligand conjugate to a

second substrate by binding through a binding partner also while Liang suggests that a Si-linker-DNA molecules binds to a glass/Si surface by depositing the free molecules from solution Guire nor Liang suggest the binding of molecules directly to a second substrate while their DNA part is associated with a second molecule which in itself is bound to a first substrate. Thus, neither Guire nor Liang describes the methods of the present invention. Guire requires a linker as an element for binding the ligand to the second substrate. One cannot remove an element of Guire so as to make it unoperable and assert it was obvious without some teaching that this can be done. Based on Guire there is no such teaching and thus the Examiner cannot sustain such an assertion.

Further, Applicants assert that a person of ordinary skill in the art at the time the invention was made would not know how to use the Guire method or how to change or modify it alone or in combination with Liang for the purpose of transferring molecules from a first substrate directly to a second substrate. Guire *et al.* do not provide any experimental data or conditions that will allow a person of ordinary skill in the art to successfully practice the invention. The method of transferring the molecules from one substrate to another as cited by Guire is as follows:

“(3) bringing the assay array support into sufficient proximity with the master array, under conditions suitable to permit the attached multi-ligand conjugates to attach to the assay array support (e.g. by binding between the third ligands and the corresponding attachment sites present upon the assay support surface), and (4) disassociating the hybridized complementary oligonucleotides under conditions suitable to permit the assay array support to be recovered and used. The resulting assay array comprises an assay array support having attached thereto a plurality of multi-ligand conjugates” (column 3, lines 53-63).

“Once the “sandwich” structure has been formed, the base pairing between address nucleotides (of the master array) and complementary nucleotides (of the conjugate) can then be disassociated, in order to permit the assay array to be removed with the multi-ligand conjugates attached thereto” (column 6, lines 16-21).

“(g) contacting the hybridized multi-ligand conjugates with the assay support surface under conditions suitable to permit the conjugates to be transferred to the assay support in a pattern corresponding to their pattern on the master array, e.g., either by polymerizing a third ligand (provided in the form of a polymerizable group), or by binding a third ligand (provided in the

form of a third binding ligand) with a corresponding attachment site provided by the assay support surface; and h) dissociating the first binding domain from the master array support in a manner that permits the conjugates to remain upon the assay support surface in the desired pattern" (column 18, lines 12-24).

Accordingly, Guire does not disclose a process for disassociation/binding of the multi-ligand conjugates. Applicants assert that the number of options that must be tested experimentally in order to find a working procedure for Guire or for the combination of Guire and Liang is unlimited. A teaching needs to be made to direct one skilled in the art toward what to change; Specific conditions must be found in order to allow a molecule that is bound to another molecule on one surface to be transferred to another surface and to further disassociate from the other molecule to which it was previously bound.

Applicants assert that a person of ordinary skill in the art at the time the invention was made would not know how to dissociate the second set of molecules from the first and how to bind the second set of molecules directly to the second substrate in a way that will result in a complete monolayer pattern replicated on such second substrate. This is because Guire require the linker to operate.

Further, a method demonstrating the details for such disassociation and binding is not disclosed in Guire or in Liang. Each of the factors involved in the process in itself and in combination with the other parameters will dramatically alter such process and must be carefully selected in order for this process to work. For example, chemistry between "third ligands" and "second substrates" is highly selective. Thiol groups (-SH) will not bind to glass or silicon surfaces but might bind to gold under certain conditions. Si-containing groups will not bind efficiently to gold and might bind to glass/Si under very strict conditions. Surfaces that are not cleaned in a certain way can not be used for binding. Applying too much force can disassociate the first ligand from the first substrate or the third ligand from the second substrate while first ligands are not yet disassociated from their addresses.

Moreover, there is no disclosure in Guire or Liang that Si-linker-DNA molecules as described by Liang, can be bound to a second substrate upon contact while at the same time their DNA part is attached to another molecule which is bound to a "first substrate". The only

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element disclosed in Liang is that Si-linker-DNA molecules can be bound to a glass/Si substrate by deposition of the free molecules from solution.

Therefore, a person of ordinary skill in the art would not know how to modify the questionable, indefinite process of Guire which was not tested experimentally by adding an element such as the one described by Liang which in itself was not tested under conditions that involve transfer from one substrate to another.

Therefore, Guire in view of Liang can not render obvious Applicants claimed invention.

Accordingly, Applicants respectfully request withdrawal of the rejection.

In the Office Action, the Examiner rejected claims 40 and 97 under 35 U.S.C. § 103(a), as being unpatentable over Guire *et al.* [US 6,514,768] in view of Liang *et al.* [US 2003/0148304] and further in view of Aksay *et al.* [US 2001/0023024]. Applicants disagree.

Applicants assert that as discussed above, Guire in view of Liang can not render obvious Applicants claimed invention. Therefore, Guire in view of Liang and further in view of Aksay, can not render obvious Applicants claimed invention.

Accordingly, Applicants respectfully request withdrawal of the rejections to claims 40 and 97.

### **Conclusion**

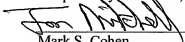
In view of the foregoing amendments and remarks, Applicants assert that the pending claims are allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

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Respectfully submitted,



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